

SEQUENCE LISTING

<110> Elan Pharmaceuticals, Inc.  
Regents of the University of California  
Schenk, Dale B.  
Masliah, Eliezer

<120> PREVENTION AND TREATMENT OF SYNUCLEINOPATHIC DISEASE

<130> 015270-008920US

<140> US 10/\_\_\_\_,\_\_\_\_  
<141> 2003-10-31

<150> US 60/423,012  
<151> 2002-11-01

<160> 57

<170> PatentIn version 3.1

<210> 1  
<211> 140  
<212> PRT  
<213> Homo sapiens

<400> 1

Met Asp Val Phe Met Lys Gly Leu Ser Lys Ala Lys Glu Gly Val Val  
1 5 10 15

Ala Ala Ala Glu Lys Thr Lys Gln Gly Val Ala Glu Ala Ala Gly Lys  
20 25 30

Thr Lys Glu Gly Val Leu Tyr Val Gly Ser Lys Thr Lys Glu Gly Val  
35 40 45

Val His Gly Val Ala Thr Val Ala Glu Lys Thr Lys Glu Gln Val Thr  
50 55 60

Asn Val Gly Gly Ala Val Val Thr Gly Val Thr Ala Val Ala Gln Lys  
65 70 75 80

Thr Val Glu Gly Ala Gly Ser Ile Ala Ala Ala Thr Gly Phe Val Lys  
85 90 95

Lys Asp Gln Leu Gly Lys Asn Glu Glu Gly Ala Pro Gln Glu Gly Ile  
100 105 110

Leu Glu Asp Met Pro Val Asp Pro Asp Asn Glu Ala Tyr Glu Met Pro  
115 120 125

Ser Glu Glu Gly Tyr Gln Asp Tyr Glu Pro Glu Ala  
130 135 140

<210> 2  
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<213> Homo sapiens

<400> 2

Glu Gln Val Thr Asn Val Gly Gly Ala Val Val Thr Gly Val Thr Ala  
1 5 10 15

Val Ala Gln Lys Thr Val Glu Gly Ala Gly Ser Ile Ala Ala Ala Thr  
20 25 30

Gly Phe Val  
35

<210> 3  
<211> 28  
<212> PRT  
<213> Homo sapiens

<400> 3

Lys Glu Gln Val Thr Asn Val Gly Gly Ala Val Val Thr Gly Val Thr  
1 5 10 15

Ala Val Ala Gln Lys Thr Val Glu Gly Ala Gly Ser  
20 25

<210> 4  
<211> 13  
<212> PRT  
<213> Influenza virus

<400> 4

Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr  
1 5 10

<210> 5  
<211> 16  
<212> PRT  
<213> Plasmodium sp.

<400> 5

Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe Asn Val  
1 5 10 15

<210> 6

<211> 10  
<212> PRT  
<213> Hepatitis B virus

<400> 6

Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile  
1 5 10

<210> 7  
<211> 19  
<212> PRT  
<213> Homo sapiens

<400> 7

Asp Gln Ser Ile Gly Asp Leu Ile Ala Glu Ala Met Asp Lys Val Gly  
1 5 10 15

Asn Glu Gly

<210> 8  
<211> 14  
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<213> Mycobacterium bovis

<400> 8

Gln Val His Phe Gln Pro Leu Pro Pro Ala Val Val Lys Leu  
1 5 10

<210> 9  
<211> 15  
<212> PRT  
<213> Clostridium tetani

<400> 9

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu  
1 5 10 15

<210> 10  
<211> 21  
<212> PRT  
<213> Clostridium tetani

<400> 10

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser  
1 5 10 15

Ala Ser His Leu Glu  
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<210> 11

<211> 16

<212> PRT

<213> Human immunodeficiency virus

<400> 11

Lys Gln Ile Ile Asn Met Trp Gln Glu Val Gly Lys Ala Met Tyr Ala  
1 5 10 15

<210> 12

<211> 13

<212> PRT

<213> Artificial Sequence

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<220>

<221> MISC\_FEATURE

<222> (3)..(3)

<223> X is preferably cyclohexylalanine, tyrosine or phenylalanine

<400> 12

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala  
1 5 10

<210> 13

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Fusion protein

<400> 13

Lys Glu Gln Val Thr Asn Val Cys Gly Gly Ala Val Val Thr  
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<210> 14

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<400> 14

Gly Val Thr Ala Val Ala Gln Lys Thr Val Glu Cys Gly  
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<223> X is amino-heptanoic acid

<400> 15

Xaa Lys Asn Glu Glu Gly Ala Pro Cys Gln Glu Gly  
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<210> 16  
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<223> X is NAC peptide

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Xaa Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu  
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<210> 17  
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Xaa Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val  
1 5 10 15

Ser Ala Ser His Leu Glu  
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<210> 18  
<211> 16  
<212> PRT  
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<223> X = NAC peptide

<400> 18

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<210> 19  
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<222> (1)..(1)  
<223> X= NAC peptide

<400> 19

Xaa Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu  
1 5 10 15

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser  
20 25 30

Ala Ser His Leu Glu  
35

<210> 20  
<211> 14  
<212> PRT  
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<222> (3)..(3)

<223> X = cyclohexylalanine, tyrosine or phenylalanine

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<222> (14)..(14)  
<223> X= NAC peptide

<400> 20

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Xaa  
1 5 10

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<223> X = NAC peptide

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<222> (6)..(6)  
<223> X= cyclohexylalanine, tyrosine, or phenylalanine

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Xaa Xaa Xaa Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala  
1 5 10 15

<210> 22  
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<223> X= cyclohexylalanine, tyrosine, or phenylalanine

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<222> (14)..(17)  
<223> X=NAC peptide

<400> 22

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Xaa Xaa Xaa  
1 5 10 15

Xaa

<210> 23

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Fusion protein

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<222> (1)..(1)

<223> X=NAC peptide

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<222> (4)..(4)

<223> X= cycloheylalanine, tyrosine, or phenylalanine

<400> 23

Xaa Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala  
1 5 10

<210> 24

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> Fusion protein

<220>

<221> MISC\_FEATURE

<222> (1)..(1)

<223> X=NAC

<400> 24

Xaa Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn Glu Ala  
1 5 10 15

Gly Arg

<210> 25

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<212> PRT  
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<220>  
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<222> (14)..(16)  
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<400> 25

Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr Xaa Xaa Xaa  
1 5 10 15

<210> 26  
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<223> X= NAC peptide

<400> 26

Xaa Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr Xaa  
1 5 10 15

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<222> (1)..(3)  
<223> X = NAC Peptide

<400> 27

Xaa Xaa Xaa Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr  
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<211> 15  
<212> PRT  
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<220>  
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<222> (1)..(2)  
<223> X = NAC Peptide

<400> 28

Xaa Xaa Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr  
1 5 10 15

<210> 29  
<211> 106  
<212> PRT  
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<220>  
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<400> 29

Xaa Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr Glu Lys  
1 5 10 15

Lys Ile Ala Lys Met Glu Lys Ala Ser Ser Val Phe Asn Val Gln Tyr  
20 25 30

Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Phe Asn Asn  
35 40 45

Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser Ala Ser His  
50 55 60

Leu Glu Xaa Xaa Xaa Xaa Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile  
65 70 75 80

Gly Ile Thr Glu Leu Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg

85

90

95

Val Pro Lys Val Ser Ala Ser His Leu Glu  
100 105

<210> 30  
<211> 77  
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<220>  
<223> Fusion protein

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<221> MISC\_FEATURE  
<222> (1)..(77)  
<223> X = NAC peptide

<400> 30

Xaa Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu  
1 5 10 15

Cys Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val  
20 25 30

Ser Ala Ser His Leu Glu Xaa Gln Tyr Ile Lys Ala Asn Ser Lys Phe  
35 40 45

Ile Gly Ile Thr Glu Leu Cys Phe Asn Asn Phe Thr Val Ser Phe Trp  
50 55 60

Leu Arg Val Pro Lys Val Ser Ala Ser His Leu Glu Xaa  
65 70 75

<210> 31  
<211> 16  
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<220>  
<223> Fusion protein

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<222> (1)..(1)  
<223> X = NAC peptide

<400> 31

Xaa Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu  
1 5 10 15

<210> 32  
<211> 26  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<400> 32

Glu Gln Val Thr Asn Val Gly Gly Ala Ile Ser Gln Ala Val His Ala  
1 5 10 15

Ala His Ala Glu Ile Asn Glu Ala Gly Arg  
20 25

<210> 33  
<211> 43  
<212> PRT  
<213> Homo sapiens

<400> 33

Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys  
1 5 10 15

Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile  
20 25 30

Gly Leu Met Val Gly Gly Val Val Ile Ala Thr  
35 40

<210> 34  
<211> 22  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Conjugate

<400> 34

Asp Ala Glu Phe Arg His Asp Gln Tyr Ile Lys Ala Asn Ser Lys Phe  
1 5 10 15

Ile Gly Ile Thr Glu Leu  
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<210> 35  
<211> 28  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Conjugate

<400> 35

Asp Ala Glu Phe Arg His Asp Phe Asn Asn Phe Thr Val Ser Phe Trp  
1 5 10 15

Leu Arg Val Pro Lys Val Ser Ala Ser His Leu Glu  
20 25

<210> 36  
<211> 43  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Conjugate

<400> 36

Asp Ala Glu Phe Arg His Asp Gln Tyr Ile Lys Ala Asn Ser Lys Phe  
1 5 10 15

Ile Gly Ile Thr Glu Leu Phe Asn Asn Phe Thr Val Ser Phe Trp Leu  
20 25 30

Arg Val Pro Lys Val Ser Ala Ser His Leu Glu  
35 40

<210> 37  
<211> 22  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Conjugate

<400> 37

Glu Phe Arg His Asp Ser Gly Gln Tyr Ile Lys Ala Asn Ser Lys Phe  
1 5 10 15

Ile Gly Ile Thr Glu Leu  
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<210> 38  
<211> 20  
<212> PRT  
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<223> Conjugate

<220>  
<221> MISC\_FEATURE  
<222> (3)..(3)  
<223> X= cycloheylalanine, tyrosine, or phenylalanine

<400> 38

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Asp Ala Glu  
1 5 10 15

Phe Arg His Asp  
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<210> 39  
<211> 34  
<212> PRT  
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<220>  
<223> Conjugate

<220>  
<221> MISC\_FEATURE  
<222> (24)..(24)  
<223> X= cycloheylalanine, tyrosine, or phenylalanine

<400> 39

Asp Ala Glu Phe Arg His Asp Asp Ala Glu Phe Arg His Asp Asp Ala  
1 5 10 15

Glu Phe Arg His Asp Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala  
20 25 30

Ala Ala

<210> 40  
<211> 34  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<220>  
<221> MISC\_FEATURE  
<222> (3)..(3)  
<223> X= cycloheylalanine, tyrosine, or phenylalanine

<400> 40

Ala Lys Xaa Val Ala Ala Trp Thr Leu Lys Ala Ala Ala Asp Ala Glu  
1 5 10 15

Phe Arg His Asp Asp Ala Glu Phe Arg His Asp Asp Ala Glu Phe Arg  
20 25 30

His Asp

<210> 41  
<211> 20  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

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<221> MISC\_FEATURE  
<222> (10)..(10)  
<223> X= cycloheylalanine, tyrosine, or phenylalanine

<400> 41

Asp Ala Glu Phe Arg His Asp Ala Lys Xaa Val Ala Ala Trp Thr Leu  
1 5 10 15

Lys Ala Ala Ala  
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<210> 42  
<211> 24  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<400> 42

Asp Ala Glu Phe Arg His Asp Ile Ser Gln Ala Val His Ala Ala His  
1 5 10 15

Ala Glu Ile Asn Glu Ala Gly Arg  
20

<210> 43  
<211> 24  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<400> 43

Phe Arg His Asp Ser Gly Tyr Ile Ser Gln Ala Val His Ala Ala His  
1 5 10 15

Ala Glu Ile Asn Glu Ala Gly Arg  
20

<210> 44  
<211> 24  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<400> 44

Glu Phe Arg His Asp Ser Gly Ile Ser Gln Ala Val His Ala Ala His  
1 5 10 15

Ala Glu Ile Asn Glu Ala Gly Arg  
20

<210> 45  
<211> 34  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<400> 45

Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr Asp Ala Glu  
1 5 10 15

Phe Arg His Asp Asp Ala Glu Phe Arg His Asp Asp Ala Glu Phe Arg  
20 25 30

His Asp

<210> 46  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<400> 46

Asp Ala Glu Phe Arg His Asp Pro Lys Tyr Val Lys Gln Asn Thr Leu  
1 5 10 15

Lys Leu Ala Thr Asp Ala Glu Phe Arg His Asp  
20 25

<210> 47  
<211> 34  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<400> 47

Asp Ala Glu Phe Arg His Asp Asp Ala Glu Phe Arg His Asp Asp Ala  
1 5 10 15

Glu Phe Arg His Asp Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu  
20 25 30

Ala Thr

<210> 48  
<211> 27  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<400> 48

Asp Ala Glu Phe Arg His Asp Asp Ala Glu Phe Arg His Asp Pro Lys  
1 5 10 15

Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr  
20 25

<210> 49  
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<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<400> 49

Asp Ala Glu Phe Arg His Asp Pro Lys Tyr Val Lys Gln Asn Thr Leu  
1 5 10 15

Lys Leu Ala Thr Glu Lys Lys Ile Ala Lys Met Glu Lys Ala Ser Ser  
20 25 30

Val Phe Asn Val Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile  
35 40 45

Thr Glu Leu Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro  
50 55 60

Lys Val Ser Ala Ser His Leu Glu Asp Ala Glu Phe Arg His Asp  
65 70 75

<210> 50  
<211> 56  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Fusion protein

<400> 50

Asp Ala Glu Phe Arg His Asp Asp Ala Glu Phe Arg His Asp Asp Ala  
1 5 10 15

Glu Phe Arg His Asp Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly  
20 25 30

Ile Thr Glu Leu Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro  
35 40 45

Lys Val Ser Ala Ser His Leu Glu  
50 55

<210> 51  
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<212> PRT  
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<220>  
<223> Fusion protein

<400> 51

Asp Ala Glu Phe Arg His Asp Gln Tyr Ile Lys Ala Asn Ser Lys Phe  
1 5 10 15

Ile Gly Ile Thr Glu Leu Cys Phe Asn Asn Phe Thr Val Ser Phe Trp  
20 25 30

Leu Arg Val Pro Lys Val Ser Ala Ser His Leu Glu  
35 40

<210> 52  
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<212> PRT  
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<400> 52

Asp Ala Glu Phe Arg His Asp Gln Tyr Ile Lys Ala Asn Ser Lys Phe  
1 5 10 15

Ile Gly Ile Thr Glu Leu Cys Phe Asn Asn Phe Thr Val Ser Phe Trp  
20 25 30

Leu Arg Val Pro Lys Val Ser Ala Ser His Leu Glu Asp Ala Glu Phe  
35 40 45

Arg His Asp  
50

<210> 53  
<211> 22  
<212> PRT  
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<220>  
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<400> 53

Asp Ala Glu Phe Arg His Asp Gln Tyr Ile Lys Ala Asn Ser Lys Phe  
1 5 10 15

Ile Gly Ile Thr Glu Leu  
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<210> 54  
<211> 14  
<212> PRT  
<213> Homo sapiens

<400> 54

Lys Glu Gln Val Thr Asn Val Cys Gly Gly Ala Val Val Thr  
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<210> 55  
<211> 13

<212> PRT

<213> Homo sapiens

<400> 55

Gly Val Thr Ala Val Ala Gln Lys Thr Val Glu Cys Gly  
1 5 10

<210> 56

<211> 12

<212> PRT

<213> Homo sapiens

<220>

<221> MISC\_FEATURE

<222> (1)..(1)

<223> X = amino-heptanoic acid

<400> 56

Xaa Lys Asn Glu Glu Gly Ala Pro Cys Gln Glu Gly  
1 5 10

<210> 57

<211> 14

<212> PRT

<213> Homo sapiens

<220>

<221> MOD\_RES

<222> (1)..(1)

<223> ACETYLATION  
X= Aecylated proline

<220>

<221> MISC\_FEATURE

<222> (1)..(1)

<223> X = Aecylated proline

<400> 57

Xaa Ser Glu Glu Gly Tyr Gln Asp Tyr Glu Pro Glu Cys Ala  
1 5 10